

Claims

- [c1] 1. A method of detecting defects of a semiconductor device, said semiconductor device comprising a substrate, a gate, a source region, a drain region, a plug, an insulating layer, and a conducting line, said plug electrically connected with one of said source region and said drain region and located above a portion of said gate, at least a defect existing between said plug and said gate, said method comprising:
- polishing said semiconductor device until said plug above said gate is substantially removed;
 - cleaning said semiconductor device;
 - removing said insulating layer between said gate and said plug; and
 - detecting said defect between said plug and said gate.
- [c2] 2. The method of detecting defects of a semiconductor device of claim 1, wherein said polishing step further comprises polishing said semiconductor device to partially expose said gate.
- [c3] 3. The method of detecting defects of a semiconductor device of claim 1, wherein said cleaning step comprises: using deionized water to clean said semiconductor de-

vice; and
drying said semiconductor device.

- [c4] 4. The method of detecting defects of a semiconductor device of claim 1, wherein said removing step comprises: performing a wet etching process; and performing a dry etching process.
- [c5] 5. The method of detecting defects of a semiconductor device of claim 4, wherein a material of said insulating layer comprises silicon dioxide, and an etchant of said etching process comprises HF.
- [c6] 6. The method of detecting defects of a semiconductor device of claim 4, wherein said dry etching process comprises a reactive ion etching process.
- [c7] 7. The method of detecting defects of a semiconductor device of claim 4, wherein said detecting step comprises using a scanning electron microscope to detect said defect.
- [c8] 8. A method of detecting defects of a semiconductor device, said semiconductor device comprising at least two adjacent conducting layers and an insulating layer, said insulating layer being disposed between said two adjacent conducting layers, a defect existing between said two adjacent conducting layers, said method comprising:

polishing said semiconductor device to partially expose said two adjacent conducting layers;
removing said insulating layer between said two adjacent conducting layers; and
detecting said defect between said two adjacent conducting layers.

[c9] 9. The method of detecting defects of a semiconductor device of claim 8, further comprising cleaning said semiconductor device after said polishing step and before said removing step.

[c10] 10. The method of detecting defects of a semiconductor device of claim 9, wherein said cleaning step comprises: using deionized water to clean said semiconductor device; and
drying said semiconductor device.

[c11] 11. The method of detecting defects of a semiconductor device of claim 8, wherein said removing step comprises a wet etching process.

[c12] 12. The method of detecting defects of a semiconductor device of claim 8, wherein said removing step comprises a dry etching process.

[c13] 13. The method of detecting defects of a semiconductor device of claim 12, wherein said dry etching process in-

cludes a reactive ion etching process.

- [c14] 14. The method of detecting defects of a semiconductor device of claim 8, wherein said detecting step comprises using a scanning electron microscope to detect said defect.